



Fleet Public Health

Navy Environmental Health Center

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Inside this Issue:

	Page
Ventilation Deficiencies affecting the Composite Shop on Large Deck Amphibious Ships	1
From the SEL	2
From the OIC	3
Sleep Debt	6
COLA Accreditation at an NEPMU Microbiology and Chemistry Laboratories	8
Consolidated Industrial Hygiene Lab Recognized for Quality Laboratory Services	10
Evaluation of Mass Screening for Cholesterol Levels	11
Environmental Assessment: Lessons Learned	12
Captain Novak Takes the Helm at NEPMU-2	14
NEPMU-6 Aids Returning EP-3 Crew After Detention in China	14
Hail & Farewell	15

Ventilation Deficiencies affecting the Composite Shop on Large Deck Amphibious Ships

Composite shops onboard the LHD Amphibious Assault ships, used for repairing the skins of the aircraft they carry, have the potential to generate dust and vapor levels that may be harmful to the lungs and irritate the skin. These shops are usually located aft of the hangar bay on the main deck. This space must maintain a clean, cool and low humidified environment so bonding of the composite material will cure without defects. To ensure proper adhesion of the composite layers, room temperatures must also be maintained between 65-75°F with relative humidity between 30-50%. These requirements must not be relaxed. Typically, a cone and laboratory hood are used to exhaust contaminants generated from building composite skins.

According to NAVSEA and SUPSHIP engineers, it was determined that the ventilation design criteria for the cone hood was never developed and the system was designed using criteria for exhausting welding fumes rather than dust from composite work. Also, measured flow rates, transport, capture and face velocities in the cone hood and duct are less than recommendations published in the American Conference of Governmental Industrial Hygienist's (ACGIH) "Industrial Ventilation A

Manual of Recommended Practice 22nd Edition".



Cone hood used to exhaust composite dust (foreground) and lab hood used to exhaust vapors from mastics used to bond composite fibers (background).

The cone and lab hoods may be necessary to maintain dust and vapor levels below the Navy's Occupational Exposure Limit (OEL) of 10 mg/m³ and provide a clean environment for proper adhesion of the composite fibers. The laboratory hood is used to exhaust vapors generated from mastics used in the layering process. The cone hood is used to exhaust dust generated by hand and power sanding of the composite material.



Capture velocities must be capable of collecting dust from approximately 6 inches from the generation source.

(Continued on page 5)

Navy Environmental and Preventive Medicine

Unit No. 2, Norfolk, VA – Unit No. 5, San Diego, CA – Unit No. 6, Pearl Harbor, HI – Unit No. 7, Sigonella, IT

From the S.E.L.



Wow! It's hard to believe that it has already been 12 months since I last sat here attempting to write this very article for the July 2000 issue of the *Fleet Public Health Bulletin*. Where does the time go? Between daily business, strategic planning, the NEHC Workshop, performance evaluations, mid-term counselings, award writing, meetings, meetings, and meetings, the year has been a blur.

I'd like to begin by recognizing certain individuals within Worldwide NEHC for their recent accomplishments. First, a handshake goes out to our Command Master Chief, HMCM (SW/AW/FMF) Abrams, for his recent selection to E9. I think most of us saw it coming! Secondly, congrats to Jill Szczepanski, NEPMU2, for her advancement to Senior Chief. Thirdly, congratulations to the Navy Preventive Medicine Technician of the Year, HM1 Chamberlain and Worldwide NEHC's Sailor of the Year, HM2 Yett, both from NEPMU-2 — more proof that hard work pays off!

I'd like to take this opportunity to say, "Goodbye." Although it is still a few months until I go ashore, this is the last publication of the *Fleet Public Health Bulletin* before I hang up my uniform for good. It's been nearly two years since I checked on board, and in this short time, I've witnessed the remarkable individual growth of each enlisted staff member. Consequently, I have the highest expectations for them and their careers. I'm confident in their ability to move Navy Preventive Medicine forward and to make their mark on Navy Medicine. I also anticipate seeing their names on future selection board lists—some as

Chiefs and others as Officers. I'm reminded of shipmates throughout the years who had a profoundly positive impact on my career and can only hope that I have been half as successful in touching the lives of those that I have served with.

I have grown to sincerely appreciate the professionalism and overall ability of the Preventive Medicine Technician. Those who have earned the 8432 NEC are some of the best trained and most well-rounded public health professionals in the Department of Defense. I'm also extremely impressed with our Lab Techs. I applaud you all and your decision to join this community and would ask that you continue to recruit others into our NECs. The health of Navy Preventive Medicine is hinged on our ability to attract qualified personnel with a genuine interest in this field.

It's amazing how complicated life gets when we near a transition point. I've had the better part of two decades to plan, but the nearer I get to my Fleet Reserve date, the less prepared I feel about leaving the Navy. Considering the amount of moving we do while on active duty, you'd think we'd qualify as experts—especially by the time we reach retirement eligibility! What I'm experiencing is that this "final" move guarantees all the usual headaches but with the added concern of unemployment.

NEPMU5 has spoiled me. I have to believe that my prospects for a second career are promising, but I'd be hard pressed to think that there is anything out there even close to what I've had here: an enlisted crew second to none, officers with a sincere desire

(Continued on page 4)

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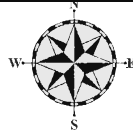
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From the OIC



First, I want to thank my Senior Enlisted Leader, HMCS John Mattson, for the outstanding service he gives this Unit. In considering his retirement (see SEL column in this issue), I reflected on how much I rely on his observations, experience and advice. Our enlisted staff, officers and civilians all frequently use him as a sounding board and problem solver, and he serves us extremely well. Though frequent personnel rotation may have some benefits, the departure of good people is not something I relish!

As I write this, we're just finishing the Navy Occupational Health and Preventive Medicine Workshop, held here in San Diego this year. My hat's off to CAPT Sack, CO NEHC, for an excellent meeting. And thanks also to all of you that contributed, from site preparations to speakers. A lot of work went into the workshop, both public and behind the scenes. The workshop has also been a great opportunity to see and visit with many enlisted, officer, and civilian colleagues that I've worked with over the years. I'm continually impressed with the variety of outstanding things that you, as Navy Preventive Medicine and Occupational Health professionals, are doing throughout the world.

Something that was mentioned by speakers in our opening ceremony, and a number of times throughout the workshop, is the issue of metrics, or how we measure and assess what we do. This has been a hot topic in recent years, for the military, for other government agencies, and also in the private sector.

So, how exactly do we measure what we do? Productivity is one aspect of our jobs, and perhaps a reasonable place to start. For example, there are lots of things we do that we can count in a time period, and keep track of over time: galley inspections, other inspections, consultations, uniforms treated with permethrin, courses taught, students trained, lab tests done, etc.

A step beyond keeping track of the number of times we do some service, is to look at how to measure the effectiveness of our activities. That may not be the same thing as simply counting the number of times a service is provided, and can be trickier. It is often difficult to first define what is effectiveness for a particular

activity, and then difficult as well to determine measures of that effectiveness.

For much of what we do in Preventive Medicine, effectiveness means keeping people healthy, or preventing disease. So keeping track of disease and injury rates is one appropriate measure of the effectiveness of our work. But that kind of counting and tracking is sometimes difficult and always time-consuming. We look forward to computer programs that will enable easy tracking of disease and injury rates by unit medical personnel, without requiring data entry beyond what's already done for admin and medical care purposes.

There are undoubtedly other measures of effectiveness for Prev Med and Occ Health activities. But selecting appropriate metrics is both art (good judgment) and science. Perhaps you'll suggest some measures that we all can use!

Borrowing a page from our line associates, we may get some insight from reviewing their process of selecting measures of effectiveness (MOEs) for possible courses of action in military operations.¹ According to their guidelines, one must first carefully look at the objective or task being accomplished. Then consider the ways to define and measure effectiveness. Then one usually has to determine what measures are practical that can be used as surrogates for the usually hard-to-measure true indicators of effectiveness. In other words, the challenge often is which criteria should be chosen to represent the more "unmeasurable" true measures of effectiveness. MOEs should:

- 1 Relate to the objectives to be accomplished
- 2 Reflect how well those objectives are met (i.e., the MOEs should be criteria to determine success).
- 3 Provide a basis for comparing relative merits of various courses of action.

Further, MOEs must be closely related to the objectives, otherwise one won't be able to satisfactorily choose among the various courses of action. MOEs should be in terms that show the degree of accomplishment of the objective. MOEs are selected specifically for each objective, and also are correlated with the overall mission.

So, how can we apply this line perspective on "measures of effectiveness" to our own work? Consider the example of food and water sanitation. Preventive medicine personnel spend a lot of time doing prevention activities in these areas. We inspect food-service facilities and food storage facilities, we train

From the SEL

(Continued from page 2)

to share their professional knowledge, and an OIC with an open door. I couldn't have asked for a better scenario.

So why retire? First it is in line with decisions made several years ago; and secondly I'm tired of living away from my family. If they had been in the area, the Navy would have to drag me out of here. Unfortunately this is not the case!

Before I end this "eulogy" and soon my Navy career, I feel it my duty to share some bits of wisdom (I use this term loosely) that I attribute much of my success:

- Decide now if you are going to make the Navy a career.
- Learn to (really) listen. You'll be surprised what you hear!
- "Please" and "Thank you" are powerful words.
- Avoid being just a "Technician." We all took the same oath.
- Take the tough jobs and leave the easy ones to your competition.
- Don't take yourself too seriously.
- Communicate—it's the framework of effective leadership.

I have thoroughly enjoyed my Navy career as a Hospital Corpsman. I am also extremely grateful to have been called "Chief" by those who I consider the Navy's finest—I'll miss you. I challenge all of you to make the most of the Navy. I wish you all the best and have great hopes for your continued success. "See ya' and be safe!"

**HMCS J. E. Mattson
SEL
NEPMU-5**

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From the OIC

(Continued from page 3)

foodservice personnel, we test water, and we try to educate the troops on handwashing, good eating practices on liberty, etc. A possible measure of effectiveness for all this work could be the rate of gastrointestinal illness. How does this measure stack up against the MOE guidelines above? It (1) relates to our objective (to have a healthy crew), (2) relates to how well the objective is met (ie, the lower the illness rates, the more successfully we meet our objective), and (3) provides a way to compare different prevention activities (by their effect or lack of effect on the illness rates). So the illness rate is likely a good MOE to consider, though it's not the only one.

Using metrics in our work, and choosing appropriate ones, is important, both to justify and focus our time and money. In other words, good metrics can show us what problem areas most need prevention effort, and in working those problem areas we can use the metrics to show us which prevention activities are effective and which aren't. But picking good medical metrics to measure is often tough. If it were easy, we wouldn't spend as much time on this topic as we do now! I encourage you, as I do our staff here, to spend some time and imagination looking at how to measure our effectiveness in Navy Prev Med and Occ Health, and to pass those ideas up your chain.

Let me end this note by mentioning another subject. Each year this July issue coincides with several holidays and historical events important to us as a Navy and as a nation: Memorial Day (28 May), Battle of Midway (4 Jun), Normandy Allied invasion (6 Jun), Flag Day (14 Jun), Hospital Corps birthday (17 Jun), Korean War anniversary (25 Jun), and Independence Day (4 Jul). These are all opportunities to take time to reflect on the debt we owe those men and women who have preceded us, and sacrificed in so many ways on our behalf. We inherit the tradition and heritage they built, and each of us now adds to it through our own service. Thank you for the work and sacrifices you make, day in and day out.

**CAPT John Tueller
OIC, NEPMU-5**

¹ Commander's Estimate of the Situation, Naval War College publication 4111B, pgs 5-2 and 5-3, 9/97

Ventilation Deficiencies affecting the Composite Shop on Large Deck Amphibious Ships

(Continued from page 1)

The cone and lab hoods branch from the main duct. The system does not maintain a tapered duct design and incorporates needless elbows and flex duct. The duct branches are round and attach to the main duct that contains a HEPA filter which is comprised of rectangular duct.



HEPA filter upstream from hoods

Within the main duct a damper is used to manage flow between the two hoods. If the Sailor is not properly trained, they may not recognize the need to adjust the damper which may result in exposures exceeding the OEL. A portable vacuum to control composite dust from the sanding operations is available, however, the vacuum is reportedly never used and the proper attachments are frequently lost.



Damper adjustment lever (used to manage flow between the lab and cone hoods).

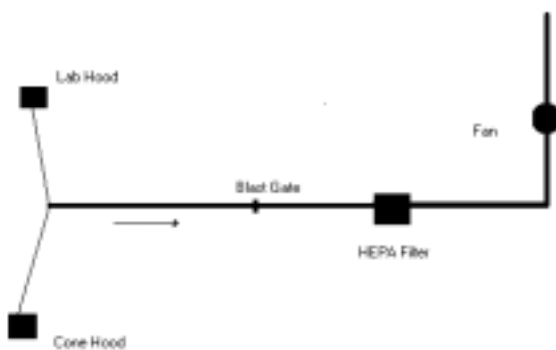


Diagram of Local Exhaust Ventilation System in the Composite Shop

Per the ACGIH ventilation manual, the cone hood requires a transport velocity between 3000 and 3500 fpm and a capture velocity of 500-750 fpm. We chose a distance of 6 inches from the face as our measurement point for determining the capture velocity. Since most work can not be performed directly at the face, we were confident that this distance accurately represented a reasonable work distance. Our measurements indicated the capture velocity is less than 100 fpm and transport velocities are approximately 1500 fpm.

Ventilation Requirements for the Cone Hood and Duct Branch

	Measured	Required
Transport Velocities (fpm)	1500	3000-3500
Capture Velocities (fpm)	<100	500-750

Recommendations for Correcting the System

Duct design is poor and must be corrected to improve transport of dust particles within the duct system. To improve overall flow and transport velocities we recommended:

- ✓ Installing a fan capable of maintaining transport and face velocities listed above.
- ✓ Installing a tapered duct system comprised of round duct and minimizing flex duct which adds to the frictional loss resulting in low flow.
- ✓ Improving the seal of the damper to reduce turbulence within the walls of the duct.
- ✓ Sailors must also be properly trained to use the damper to minimize exposures.
- ✓ Install a flanged hood to increase collection efficiency.



Cone hood with plain duct opening

NAVSEA is redesigning the system to maintain a transport velocity of 3500 fpm and capture velocity between 500-750 fpm in the cone's hood and branch. Increasing the flow of the system may increase the temperature in the space since greater volumes of conditioned air will be exhausted. This may require augmenting the current air conditioning unit to provide

(Continued on page 6)

Sleep Debt

Your snooze alarm chimes loudly as you drag yourself to your coffee pot. If this resembles how you begin your day, you may be one of 70 million Americans who may suffer from sleep deprivation. Sleep deprivation is frequently referred to as America's new silent epidemic. According to a National Sleep Foundation poll, 65% reported not getting enough sleep, an increase of 33% from a survey done five years before.

No matter the person, chronic and acute sleep deprivation is cumulative, resulting in a sleep debt. Sleep debt is the difference between the amount needed, and the amount one slept. The average adult needs 7.5 hours of sleep, while children need nine to eleven. Some people may need only 6 hours, yet some require a full ten hours of quality sleep. The average person sleeps one hour less than needed, accumulating an average 28-hour sleep debt per month. Any person who carries a sleep debt, whether two or 28 hours, will not perform at an optimal level. Sleep deprivation and debt have serious negative impacts on health, performance, and safety in all settings.

Cumulatively, at any given time the American population carries a sleep debt of over half a billion hours. Even when not carrying a debt, people are still

at risk of being affected by a drowsy person who is unable to operate equipment, drive a vehicle or stand a watch in a fully alert state. Sleepiness has been cited as significantly contributing to the Chernobyl Disaster, the Challenger Explosion and countless daily errors in judgment. If not caused by sleepiness, accidents are certainly aggravated by tired people as they may be unable to respond to impending events in a timely manner. At present there are no ways to replace or compensate for sleep debt. The only way to make up for lost sleep is to sleep more!

Soon after the loss of as little as two hours of sleep, sleep debt begins to build up indefinitely. Excessive sleepiness may cause a person to have an uncontrolled sleep episode, called a micro sleep. This can occur at any time without warning. For example, 40,000 injuries and 1,550 deaths occur annually due to drowsy drivers. A person carrying a substantial sleep debt may feel awake, alert and able to drive or perform tasks, yet be at increased risk for accidents and injuries. People in this state can have a profound impact on readiness in a variety of settings. They are at risk for elevated stress levels, impaired reaction times, poor attention span and lowered productivity. The likelihood of accidents and injuries are increased because sleep deprivation affects most components of performance. In controlled lab studies subjects exhibited impaired

(Continued on page 7)

Ventilation Deficiencies affecting the Composite Shop on Large Deck Ships

(Continued from page 5)

cool air ranging between the recommended temperatures of 65-75° F.

We have spoken with the ship designers at PMS 377 and Technology, Management and Analysis (TMA). PMS 377 is the Amphibious Warfare Program of PEO Expeditionary Warfare and they are tasked with the Acquisition of LHD 1 Class ships. TMA is a contractor for PMS 377 and provides engineering support for both design and construction of LHDs. The designers are aware of the systems design deficiencies and NAVSEA and SUPSHIP are working with them to design a system meeting the recommendations sited above.

A spirit of expediency exists within the fleet and this is particularly true when we are referring to issues that compromise safety and health. Some may argue

that we do not have air sampling data to prove that exposures exceed the OEL. Nor, do we have evidence regarding the true frequency of exposures over time. Our approach was guided by the need to correct the flawed ventilation because we don't know the worst case exposure scenario. We are confident that this gap in our strategy will begin to close as we increase the air sampling data in the DOEHRs and gain a better understanding of exposure profiles in all hazardous work stations in the fleet.

NEPMU-5

Sleep Debt

(Continued from page 6)

memory, psychomotor coordination, information processing and decision making abilities. Subjects also demonstrated poorer performance despite increased effort and many reported not caring about the quality of their work. It is essential that each person understands the importance of healthy and adequate sleep to avoid negative outcomes.

Operational commitments create a unique obstacle for sailors trying to balance sleep, work and family lives. Irregular shifts make it difficult for people to adhere to sleep patterns. Even with preplanned schedules and watch bills, sailors must work at night when their biological clock craves sleep, and try to sleep when their body wants to stay awake. Studies indicate that 10-20 % of people who work night shifts report falling asleep on the job and many more fall asleep while driving home.

An underway survey was conducted on a DDG in which subjects were asked to answer the question, "How many hours of sleep do you get on an average per night?" The crew reported that 46% got five hours or less per night, and 53% reported getting between 6-8 hours. Since the average person needs 7.5 hours per night, the distribution of sleep debt in this crew is well over 70%.

To examine sleep patterns at a shore facility, the Epworth Sleepiness Scale was used to measure the prevalence of sleep debt. Twenty-two officers, civilians and enlisted staff participated by assigning values to questions addressing their likelihood of falling asleep in various situations. Assigned scores revealed that 32% of the staff exhibited mild to moderate sleepiness. Two staff members reported signs and symptoms consistent with a potential, undiagnosed sleep disorder. One staff member reported having had a drowsy-driving related crash.

Symptoms associated with sleep deprivation include irritability, impatience, anxiety, and depression. Recent studies show causal associations between sleep deprivation and diabetes and obesity. Children are misdiagnosed with Attention Deficit Disorder and Attention Deficit Hyperactive Disorder when in reality they are sleep deprived. There is nothing that can safeguard your health from the negative outcomes of sleep debt. The sleepy wear their debt on their sleeve as a symbol

of dedication and endurance, but lack of sleep is a factor in many mishaps and decreases productivity. To improve the quality of sleep, employ the following practices:

- Avoid or consume less alcohol, caffeine and nicotine before bedtime.
- Drink less fluids before bed time.
- Avoid heavy meals before bedtime.
- Exercise regularly, preferably in the afternoon.
- Try a relaxing routine to unwind before bedtime.
- Establish a regular bedtime and wake time and stick to it.
- Balance work, personal and family time, and get enough sleep.
- Avoid drowsy driving! Carpool, take a nap before driving or pull over if needed. Take public transportation if possible. Rolling down windows and loud music do not prevent you from falling asleep.
- Seek medical attention if you aren't sleeping well. You may have a treatable sleeping disorder.

Tips for Commanders and Department Heads:

- Educate your shift workers about their need for sleep and the dangers of sleepiness and fatigue.
- Install bright lights.
- Schedule shifts to allow sufficient breaks and time off, especially when members switch shifts. Avoid overtime.
- Allow short breaks for naps or exercise periods to improve alertness, judgment, safety and productivity especially during drills or long underway periods when people get less sleep.
- Ensure fatigued personnel are not operating equipment or performing procedures that place themselves and crew members at risk.
- Avoid short duration rotations such as "six on, six off" duty sections as personnel cannot get enough sleep.
- Encourage safe driving of sailors when traveling to and from work. Night shift workers are at increased risk for drowsy-driving accidents on their way home, and sleepy workers are also at risk driving to work in the morning. Promote carpools, taxis and public transportation.

For additional information on sleep hygiene, sleep disorders, drowsy driving, and sleep research visit the National Sleep Foundation homepage at:
www.sleepfoundation.org.

(Continued on page 10)

COLA Accreditation at an NEPMU

Microbiology and Chemistry Laboratories

Our objective was to pass Commission on Office Laboratory Accreditation (COLA) inspection to gain Clinical Laboratory Improvement Amendment (CLIA) accreditation for both the Microbiology and Industrial Hygiene laboratories at NEPMU-5. Capabilities to be approved included bacterial, parasitic, blood lead, zinc protoporphyrin, and urine mercury. Share our experience with others who may be facing similar requirements.

Background Informational/Methods: COLA uses an inspection list of 299 questions which each lab had to answer independently. While the need for NEPMU Industrial Hygiene labs to be accredited is understood as they handle thousands of patient specimens per year, the Microbiology requirement is not so clear, due to the lack of samples seen at NEPMUs. COLA was chosen over other accreditation agencies as it specializes in smaller laboratories and is recognized by CLIA and its DoD counterpart, the Clinical Laboratory Improvement Program (CLIP). Preparation for this inspection required months of writing detailed standard operating procedures, safety manuals, and quality control forms

Results: Both labs easily passed the inspection in JAN 2000 and became CLIA/CLIP-accredited to provide patient care to military personnel in our AOR or when deployed. This is the first NEPMU Microbiology laboratory to be CLIA/CLIP accredited. The result of the accreditation process is an improved, organized laboratory which meets the needs for future taskings. Such taskings include being an enteric reference site, representing the DoD as the Navy Level B facility in the Laboratory Response Network for Biological Terrorism and Chemical Agent detection, as well as meeting the potential accreditation requirements for deployed medical platforms.

Background: Why Did We Do it? For a few years, DoD clinical laboratories were waived from the Clinical Laboratory Amendments Act of 1988. However, the Clinical Laboratory Improvement Program (CLIP) DODI 6440.2, dated APR 94, changed this policy to mandate accreditation. Laboratory tests were classi-

fied as waived, moderate complexity or high complexity. Probably the most useful source of information on CLIA is the CDC website:

<http://www.phppo.cdc.gov/clia/default.asp>.

CLIP requirements are published in the Armed Forces Institute of Pathology pamphlet 40-24: "Department of Defense Clinical Laboratory Improvement Program (DoD CLIP)". AFIP's Office of Clinical Laboratory Affairs (OCLA) maintains oversight of the DoD CLIP. The Senior Navy Officer at OCLA is CAPT R.G. Craigmiles (CraigmilesR@afip.osd.mil).



Ms. Arlene Hitchcock runs the Graphite Furnace for Blood Lead levels.

As NEPMU Consolidated Industrial Hygiene Laboratories routinely test human specimens for occupational health hazards to support medical caregivers, the requirement for accreditation was not unexpected. For the microbiology labs, however, which do not regularly test human clinical specimens in port, this was a gray area. At NEPMU-5, we collected nasal specimens from each student at the Basic Underwater Demolition / SEAL school (BUD/S) to survey for carriage of *Staphylococcus aureus*. Those students positive for carriage were given prophylactic medication, so we were involved in medical caregiving, even though the students were not ill.

We were also concerned about future changes in deployed medical lab platforms, which may require accreditation. Our participation in the CDC Laboratory Response Network may depend upon being accredited even though our biowarfare assays are not CLIA-approved. The Global Emerging Infections System (GEIS) is interested in funding an accredited DoD Enteric Disease Reference Lab to confirm and characterize strains isolated in hospitals and outbreaks. This

COLA Accreditation at an NEPMU Microbiology and Chemistry Laboratories

(Continued from page 8)

would give NEPMU and their deployable labs great capability and experience in this area.

Requirements

The DoD Certificate of Accreditation requirement can be met with **accreditation by a private non-profit agency** approved by Office of the Assistant Secretary of Defense for Health Affairs (OASD (HA)) (ex: JACHO, CAP, or COLA).

NEPMU and the future FD-PMU microbiology laboratories may be excepted from complying with CLIP registration if:

- a. They do not report patient-specific results for diagnosis, prevention, or treatment of disease or assessment of health, or
- b. They are assigned to field units that may perform limited human testing.

Since many tests performed by NEPMUs (ex: bacterial culture, blood leads, zinc protoporphyrin and urine mercury) are considered **High Complexity**, the laboratory is considered to be this level. A list of approved tests and their complexity levels may be found on the CDC CLIA website.

Each lab must successfully participate in a **proficiency testing (PT)** program. These must be conducted with recognized agencies (ex: CAP) and handled the same as patient specimens. Results are sent to both the CLIP office and to the accreditation agency.

Microbiology laboratories may be tested in: bacteriology, parasitology, mycology, mycobacteriology, and virology. The NEPMU-5 Microbiology Lab is tested in **bacteriology and parasitology** only.

Chemistry includes: routine chemistry, urinalysis, endocrinology, and toxicology. The NEPMU-5 Industrial Hygiene Lab is tested in **routine and toxicology chemistry** only.

COLA has 299 questions, most of which applied to our laboratories. They are categorized as **Essential (E)** – must comply, **Required (R)** – should comply, and **Recommended (C)** – desirable to follow.



Mr. Charles Kubrock, Chemistry Team Leader, with COLA-required Chemistry manuals

Results and Discussion

The preparation for the inspection took months of work, which was divided among the staff. In the Microbiology Lab, LCDR Scott Thornton updated the policies, safety, and general instructions. HMC Deborah Doggett coordinated the SOPs and quality control (QC) forms, while HM2 William Hutchinson collected Material Safety Data Sheets (MSDS). In the Industrial Hygiene Lab, Mr. Charles Kubrock updated sample analysis methods, instrument maintenance records, lab biohazard procedures, and new safety requirements. Dr. Richard Norman completed needed-quality control documentation, proficiency record results, and sample processing procedures.



Microbiology Lab Tech in Antigua, West Indies. Accreditation requirements may soon affect PM-MMART work.

We had a problem identifying a Laboratory Director with a Ph.D. or M.D. and experience working in an accredited clinical lab. NEPMU Lab Officers often do not have these credentials. We also needed a Pathologist to act as a consultant. This will be resolved with an MOU with Naval Medical Center, San Diego.

The inspection took only one day, with the COLA representative spending most of her time reviewing the manuals that had been prepared and only briefly walking through the facilities. A few discrepancies were noted and corrected within two or three weeks.

(Continued on page 10)

Consolidated Industrial Hygiene Lab Recognized for Quality Laboratory Services



Pictured L to R: Dr Roy Ishikawa, CIHL Department Head, and CIHL Chemists Mr Dennis Lee, Mrs. Paraluman Bonifacio, Mr Dwight Fujiwara, and Mr Bill Matsuura (Photo by HM2 (SW) Derek Boyd)

NEPMU-6's Consolidated Industrial Hygiene Lab has met all criteria for Laboratory Accreditation by the Commissions on Office Laboratory Accreditation (COLA), a national healthcare accreditation organization. Accreditation is given only to laboratories that apply rigid standards of quality in day-to-day operations, demonstrate continued accuracy in the performance of proficiency testing, and pass a rigorous on-site laboratory survey. Consolidated Industrial Hygiene Lab has earned COLA accreditation as a result of a long-term commitment to provide quality service to their customers.

COLA is a nonprofit, physician-directed organization promoting quality and excellence in medicine and patient care through programs of voluntary education, achievement, and accreditation.

COLA is approved by the federal government and sponsored by the American Academy of Family Physicians, the American Medical Association, the American College of Physicians-American Society of Internal Medicine, the College of American Pathologists, and the American Osteopathic Association.

**HM2 (SW) Derek Boyd
PMT
NEPMU-6**

COLA Accreditation at an NEPMU Microbiology and Chemistry Laboratories

(Continued from page 9)

Conclusion

The result for the Industrial Hygiene Lab is a more standardized and efficient reporting system, while for the Microbiology Lab it has also meant increased workload due to quality assurance requirements. Additionally, we have received considerably more attention from other agencies, as accreditation is one of the first requirements they ask. The need for a qualified laboratory director and consulting pathologist will be a billeting problem for any NEPMU for the foreseeable future.

**Microbiology Dept. Head
Microbiology Lab Tech
Mr. Charles Kubrock, Head CIHL
Mr. Richard Norman, QA, CIHL
NEPMU-5**

Sleep Debt

(Continued from page 7)

**Preventive Medicine Technician
NEPMU-2**

References:

1. Blatt, J., Council, F., Georges, K., Kiley, J., Kurrus, R., McCartt, A.T., Merritt, S. L., Pack, A.I., Rous, S., Roth, T., Strohl, K., STutts, J., Waller, P., Willis, D. (1999) NCSDR/ NHTSA Expert paenl on driver fatigue an Sleepiness, Drowsy driving and Automobile crashes: Report and Recommendations. *National Highway Traffic Safety Admnistration*. April 1998. (The majority came from this source.)
2. Overman, S., Rise and sigh 70 million Americans suffer from sleep deprivation: How many work for you?., *HR magazine*, 05-01-1999.
3. Cornell University, National SLeep debt is killing Americans and hurting the economy, Cornell psychologistsays, retrieved from www.sciencedaily.com/releases/1998/01/980120044307.htm
4. Carskadon, M. Adolescent sleepiness: Increases risk in high risk population. *Alcohol, Drugs and Driving* 1990;5(4)/6(1):317-28

Evaluation of Mass Screening for Cholesterol Levels

Cholesterol is an important molecule in animal cell membrane structure. Excess cholesterol travels through the blood system and may accumulate in locations on blood vessel walls, causing blockage and leading to heart disease. Often, a person is unaware of the amount of serum cholesterol they have in their system. Having their cholesterol measured can give a person information that a lifestyle change may be needed to reduce their risk for heart disease. This testing can be done in mass settings, without the need for a medical office visit. Recently, NEPMU-5 evaluated the practicality of offering on-site service to Navy and Marine Corps units on request.

Testing Events. Our service to provide mass cholesterol testing was actively advertised by our Health Promotion Department Head, CAPT Elizabeth Ledbetter, and by the Preventive Medicine Partners aboard Fleet units and activities. Units could use this service as part of a "Health Fair," held to promote a healthier lifestyle. All testing was done on-site and took approximately 10 minutes per person. The early events were done with only one machine, so volunteers often had to wait in line for quite awhile. Since then, a second machine was purchased and run simultaneously.



Cholestech LDX analyzer, printer and supplies.

Cholestech LDX. The Cholestech LDX analyzer can test blood samples from fingersticks or venous draws. It provides results for TC, HDL, TC/HDL, Low Density Lipoprotein (LDL), Triglycerides and Glucose levels. The last three parameters need 12 hours of fasting prior to testing, which is usually impractical in

mass screening situations. It can also calculate risk assessment for coronary heart disease for those above 30 years old. This feature is based on the Framingham Heart Study guidelines, and uses the analytes mentioned above along with additional data input such as age, sex, and whether or not the person is a smoker. A brochure explaining the results is provided to each person tested. The machine includes a checklist for site set-up and logs for recording results of patient and quality control runs. It is fully approved by CLIA (Clinical Laboratory Improvement Amendments) as a waived clinical method. The machine and printer together cost about \$2000, in addition to the cost of the reagent cassettes.

Logistics. Normally, a ten-minute test would be considered "rapid diagnostics." However, in this situation only six tests could be done per hour per machine. Even the addition of a second machine only doubled the number of people who could be seen to 12 per hour. Running 40 samples was a half-day project for two technicians, and a lot of line waiting for those wanting to have cholesterol testing done. Many people became angry that they spent so much time waiting in line only to be turned away at the end of the event. Therefore, testing an entire ship in this setting was out of the question.



Lab Tech tests Environmental Health Officer for serum cholesterol levels.

Medical Advice. We normally had only laboratory technicians at these events, and these personnel were not trained to give medical advice. A health care provider or health promotion nurse would need to be on hand to interpret the results for each person.

Cholestech Versatility. Another concern regarding the PM-MMART/FD-PMU is whether to have this machine in its AMAL. The future NEPMU microbiology laboratories will be very focused on having identical capabilities in port and when deployed. Other (more expensive) machines can test for many different

(Continued on page 12)

Environmental Assessment: Lessons Learned

Whether engaged in armed conflict, or participating in exercises such as Partners for Peace, military commanders are concerned about protecting their troops from adverse environmental conditions that may be encountered during deployment. A major concern, especially since the Gulf War, is the health risk posed to U.S. forces from the wide variety of inconspicuous environmental hazards. The Department of Defense (DoD) has acknowledged this concern, as demonstrated in issuance of the DoD Directive 6490.2 - Medical Surveillance and the corresponding DoD Instruction 6490.3 - Implementation and Application of Joint Medical Surveillance for Deployments. The DoD-wide guidance is currently being

implemented and refined in order to develop a joint-service pre- and post-deployment environmental health assessment protocol and template.

Recently, in response to a request from the SIXTH FLEET Surgeon, Navy Environmental and Preventive Medicine Unit No. Seven (NEPMU-7) of Naval Air Station Sigonella, Italy deployed an environmental health site assessment team to Albania in support of planning for a multi-service, multinational North Atlantic Treaty Organization (NATO) exercise. Team members consisted of CDR Michael Lemm, MSC, USN (Industrial Hygiene Officer), team leader, LT Karen Corson, MSC, USNR (Environmental Health Officer), ENS Peter Maccarone, MSC, USNR (Industrial Hygiene Officer), and HM1 Michael Richardson (Preventive Medicine Technician). In support of that mission, 14 proposed locations were evaluated in which the exercise could potentially be conducted. Team members collected air, water and soil

(Continued on page 13)

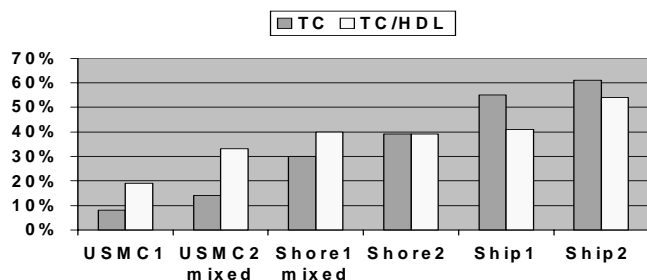
Evaluation of Mass Screening for Cholesterol Levels

(Continued from page 11)

blood analytes that would be more helpful in diagnosing complaints in deployed personnel.

Data. Nonetheless, some good data could be collected for surveillance purposes as well as individual use. Figure 1 shows how the six units compare in percentages of tested personnel with above normal TC or TC/HDL. The two ships had much higher TC levels than the Marine Corps or shore Navy units, echoing data from other studies. This information could be used by a health care provider to support a diet or exercise program on a ship with a cholesterol problem in its crewmembers.

Figure 1. Percentage of each unit testing above normal limits for each parameter. All units are ACDU unless "Mixed" ACDU and Civilian.



Summary. Our experience with running the Cholestech Analyzer for mass cholesterol testing has been mixed. Only a handful of personnel could be tested at one event, so new methods to improve flow and decrease waiting time would be needed. The limited testing range of this machine precludes it from being part of the PM-MMART/FD-PMU AMAL. On the other hand, our very limited number of units tested indicated a potential problem in shipboard personnel compared with shore Navy or Marine units. For now, NEPMU-5 has suspended mass screening for serum cholesterol levels.

Laboratory Technicians
Microbiology Department
NEPMU-5

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Environmental Assessment: Lessons Learned

(Continued from page 12)

samples from the proposed locations and consulted with the World Health Organization (WHO), the Albanian: Ministry of Defense, Ministry of Health, Institute of Public Health, Hydro-meteorological Center, and NATO counterparts in order to gather critical preventive medicine and epidemiological data. During the Commander Reconnaissance Exercise, the team leader, CDR Michael Lemm briefed the environmental assessment team's observations and conclusions to the Commanding General, Allied Mobile Forces-Land (AMF-L) and over 200 representatives from approximately 15 participating nations. The product consisted of an extensive environmental health assessment that included findings, recommendations and countermeasures to be considered during the overall operational planning as part of the operational risk management plan.

The mission of the environmental assessment team was to identify and evaluate potential health hazards (medical, environmental, and occupational) service members might be subject to at the proposed exercise locations. The environmental assessment, including the team's findings and recommendations was provided to the SIXTH FLEET Surgeon and Commander of the governing NATO command, AMF-L. The outcome of final decisions, resulted in reduction of exercise participants as well as minimization of proposed locations for use during the exercise, with the aim of sustaining and protecting the health and safety of service members.

Lessons learned during the environmental health site assessment are in the following key areas:

1) Have all of the necessary points of contact (POC) and responsibilities been established?

- ✓ Make certain with the requesting authority, the scope of the tasking and the requirements to comply with that tasking.
- ✓ Confirm that official tasking for logistical support (i.e. transportation, force protection, billeting, etc.) has been communicated to the supporting command and have a hard copy available for verification.
- ✓ Establish a main POC at the supporting command and define, in detail, mission requirements and how they will be accomplished.
- ✓ Request that meetings be scheduled with the Defense Attaché from the American Embassy and host nation counterparts (i.e. Ministry of Defense,

Husbanding Agent).

- ✓ *Anticipate* potential obstacles and challenges (i.e. access to the host country's military facilities) that may be encountered in executing mission requirements, as well as potential solutions and preventive measures that can be taken. A host nation liaison is extremely helpful.
- ✓ Follow-up frequently with the main POC from the supporting command to monitor the progress in making necessary arrangements to ensure that all mission requirements will be satisfied in the established time frame.

2) Have you exhausted all resources for preventive medicine data and other pertinent supplemental information on the country you will be visiting?

- ✓ Research and request additional resources of preventive medicine data from the Armed Forces Medical Intelligence Center.
- ✓ Consult with other services (i.e. the Army's Center for Health Promotion and Preventive Medicine theatre office) and agencies (i.e. WHO), regarding experience they may have in the area.
- ✓ Research the SIPRNET for intelligence data related to preventive medicine.
- ✓ Gather further information in each of the above mentioned areas on meteorology, topography, economy, industry, infrastructure, etc., as each will be vital in completing a comprehensive environmental health site assessment.
- ✓ Ensure that each member of the environmental health assessment team attends a NCIS security brief for the country(s) that will be visited. Doing so, will educate all members on potential threats that may be encountered and familiarize them with the customs and traditions of the country(s).

* Remember, each of us is an ambassador of the United States and must respect these customs/traditions and act as a diplomat, which will prove invaluable in gathering preventive medicine information from local nationals and host nation counterparts.

3) Have you taken all of the necessary steps to prepare for environmental sampling and analysis?

- ✓ Once all offsite preventive medicine intelligence is collected, anticipate the quantity and types of samples that should be taken and will need to be analyzed by a laboratory.
- ✓ Verify the sampling capabilities of your command and the analysis capabilities of the laboratory, and take the necessary steps to ensure the best product

(Continued on page 15)

Captain Novak Takes the Helm at NEPMU-2

On 22 June Captain Diana M. Novak relieved Captain Dwight Fulton as Officer In Charge of Navy Environmental and Preventive Medicine Unit No. 2 in Norfolk, Virginia.

For Captain Fulton the change of charge marked the end of a successful 34-month tour. He restructured NEPMU-2 and focused Unit resources and personnel on the newly defined functions of Deployment Medical Surveillance and Health Promotion. He established the Health Promotions Directorate and the Unit's Preventive Medicine Partnership Program to improve service to ships homeported in Norfolk.

Under Captain Fulton's stewardship, NEPMU-2 successfully deployed on short notice, providing humanitarian assistance to Nicaragua, Venezuela, and Puerto Rico.

CAPT Fulton's next assignment will be at the Bureau of Medicine and Surgery as the Director,

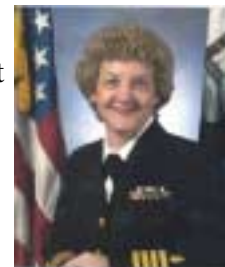


Aerospace Medicine (MED-23). He will also serve as the Aerospace Medicine Specialty Leader.

The new Officer in Charge, Captain Novak, comes to NEPMU-2 with a great deal of experience. She graduated from the Naval War College in 1995 as the Honor Graduate with Highest Distinction.

Captain Novak served as the Healthcare Operations Officer/ TRICARE Liaison, Office of the Fleet Surgeon, Commander in Chief, U. S. Atlantic Fleet from 1995-98.

Captain Novak is transferring from the Navy Environmental Health Center, Norfolk, VA where she served as the Deputy Director for Plans and Operations, and the Program Manager for the Navy's Forward Deployable Preventive Medicine Unit.



LCDR BILL HAISSIG
NEPMU-2

NEPMU-6 Aids Returning EP-3 Crew after Detention in China



Last April when the 24 detained crewmembers of the Navy EP-3 (VQ-1) were released by the Chinese government, NEPMU-6 personnel were privileged to assist in their medical debriefing and repatriation. During the crew's stopover in Hawaii, Captain Jim Beecham, MC, NEPMU-6 Officer in Charge, conducted a medical threat assessment of Hainan Island, provided a brief of potential exposure to infectious diseases, and made preventive recommendations. He also conducted a Q&A session for the crew and those present in the CINCPACFLT debriefing room. Advanced Laboratory Technicians (pictured at left) drew blood samples to establish baselines for possible disease occurrence. (Photo by Maj Timothy Robinette, Medical Corps, USAF.)

Bart Landis
Training Officer / ISD Specialist
NEPMU-6

Hail & Farewell

Welcome Aboard!

Fair Winds & Following Seas!

NEPMU-2:

NEPMU-2:

NEPMU-5:

NEPMU-5:

NEPMU-6:

NEPMU-6:

NEPMU-7:

NEPMU-7:

Environmental Assessment: Lessons Learned

(Continued from page 13)

- (i.e. use a certified contract laboratory in the event of limited analysis capabilities).
- ✓ Estimate the cost of analysis and inform the funding source.
- ✓ Inform the laboratory, as far in advance as possible, of the quantity of samples and type(s) of analysis desired. Coordinate with the laboratory for expedient shipment of samples via a courier and an appropriate turn-around time for analysis.
- ✓ Determine appropriate exposure standards for each of the suspected contaminants in advance; in order to ensure accurate characterization of potential health threats.

4) Have you determined the potential costs and appropriate funding source for this mission?

- ✓ Estimate entire cost of the mission to include transportation, number of personnel, per diem, duration of deployment, sample shipment and analysis.
- ✓ In the case of multi-service or multinational evolutions, the requesting command or exercise sponsor should provide all funding required to complete the mission. For all Navy operations, the command tasked with providing the support will most likely be responsible for funding; however, this should be discussed further with the requesting command.

5) Has the Ensign been considered for membership in the environmental site assessment team?

(Continued on page 16)

Environmental Assessment: Lessons Learned

(Continued from page 15)

- ✓ If you are fortunate enough to have a ~ bilingual Ensign at your command, it may be of assistance to include him on your team, although all other factors must be considered
Despite popular belief, Ensign's *can* be of use under *extraordinary* circumstances.

In closing, a comprehensive environmental health assessment must encompass a wealth of preventive medicine information in order to successfully evaluate each of the potential environmental hazards posed to troops during deployment. In addition to preventive medicine data collection, an accurate assessment will require the consideration of a multitude of environmental factors (i.e. industrial

activity, meteorological data, topography, etc.), which contribute significantly to the degree of health hazards present in any given location. Of key importance, is to "accurately" assess all environmental hazards in order to protect the health and safety of service members, yet not overestimate the degree of health hazards present, thereby jeopardizing the mission. In short, to provide commanders real data with which to make evidence based, acceptable risk decisions.

**PAO, NEPMU-7
(A former ensign)**

Fleet Public Health

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Your July issue!